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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/552,759

10/11/2005

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2005-1579A

2586

52349 7590 08/20/2008
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EXAMINER

DOAN, NGHIA M

ART UNIT

PAPER NUMBER

2825

MAIL DATE

DELIVERY MODE

08/20/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/552,759	Applicant(s) URIU ET AL.	
	Examiner NGHIA M. DOAN	Art Unit 2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 12, 13 and 15-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/11/05; 03/14/06; 07/25/06; 06/06/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This is response to the Applicant Response to Election/Restriction filed on 07/03/2008. Claims 1-11 are elected to be examined and Claims 12-13, 15-18 have been withdrawn from consideration, and Claim 14 have been canceled (see as Preliminary Amendment filed on 10/11/2005).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. As per claims 1 and 11, recited the limitation “setting up individual analysis conditions”, which is unclear what is condition for analyzing to be set up? The limitation “analysis conditions” is merely indefinite for failing to point out and distinctly claim the subject matter. As broadly interpretation, that “analysis conditions” is such as magnetic current sources, as incident waves and reflected waves, thickness, width, height of conductors, etc.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-2 and 4-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Liu et al., (Full-Wave Segmentation Analysis of Arbitrarily Shape Planar Circuit, 1997, IEEE, page 1-9).

7. With respect to claims 1 and 11, Liu discloses a method and apparatus for analyzing an electromagnetic field (EM) of a circuit board based on shapes of conductor patterns and signal analysis conditions (the abstract, see fig. 1a-1b descriptions) including steps of:

setting up initial shapes of conductor patterns in each layer of a multilayer circuit board (a plane printed/microwave circuit of arbitrary shape is printed on a system of stratified substrate) (see fig. 1a) ;

setting up initial ports for input or output of an external signal in each conductor pattern (two external ports are connected to blocks A and B) (see fig. 1b);

dividing two-dimensionally the multilayer circuit board into a plurality of areas (dividing the printed circuit into four smaller segments denoted as blocks A, B, C, D) (see fig. 1a);

setting up additive ports on edges of the conductor pattern which has been created by area-division (input or output ports are placed across the interconnecting lines between the adjacent blocks) (see fig. 1b);

setting up individual analysis conditions (magnetic current sources, as incident waves and reflected waves, thickness, width, height of conductors, etc.) for the initial ports and the additive ports, respectively (pages 3-4, section A, Equivalent Source of a

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Segmented Circuit and section B, GSM Space-Domain Integral Equation, also see fig. 2 and fig. 3);

performing an electromagnetic analysis of the multilayer circuit board by the divided area, based on the analysis conditions (the EM field in the individual segments can be uniquely determined by knowledge of the tangential electric (magnetic) fields over the corresponding reference plane) (see page 2, col. 2, section II, Model and GSM Space-Domain Integral equation method); and

integrating results of the electromagnetic analysis over each of the divided areas, thereby obtaining results of the electromagnetic analysis over the whole circuit board (combination of these GSM's yield an overall network characterization of composite circuit) (the abstract, section I, introduction, and section II, Model and GSM Space-Domain Integral equation method).

8. With respect to claim 2, Liu discloses the method for analyzing an electromagnetic field of a circuit board according to Claim 1, wherein in the step of dividing the multilayer circuit board into a plurality of areas, the multilayer circuit board is divided two-dimensionally into a plurality of areas using dividing lines including a plurality of straight lines parallel to each other (see fig. 1a, and also see fig. 8 as line L1, L2, and L4).

9. With respect to claim 4, Lui discloses the method for analyzing an electromagnetic field of a circuit board according to Claim 1, wherein in the step of dividing the multilayer circuit board into a plurality of areas (see fig. 1a), the multilayer circuit board is divided two-dimensionally into a plurality of areas using dividing lines

including a polygonal line or a curved line (straight line is specially of polygonal or curved line) (see fig. 1a and fig. 8).

10. With respect to claim 5, Lui discloses the method for analyzing an electromagnetic field of a circuit board according to Claim 1, wherein in the step of dividing the multilayer circuit board into a plurality of areas (see fig. 1a), shapes of the dividing lines are designated using a pointing device while representing a plan view of the multilayer circuit board on a display screen (see fig. 1a, fig. 3 and fig. 8).

11. With respect to claim 6, Lui discloses the method for analyzing an electromagnetic field of a circuit board according to Claim 1, including a step of calculating the number of the edges of the conductor pattern created by area-division (see Section A, Equivalent Source of a Segmented Circuit, also see fig. 1b).

12. With respect to claim 7, Lui discloses the method for analyzing an electromagnetic field of a circuit board according to Claim 6, wherein in the step of setting up additive ports, the ports are added, the number of which corresponds to the calculated number of the edges (expansion number of modes [Mv] as physical ports) (see Section A, Equivalent Source of a Segmented Circuit, also see fig. 1b).

13. With respect to claim 8, Liu discloses the method for analyzing an electromagnetic field of a circuit board according to Claim 1, wherein in the step of setting up additive ports, the ports are added in the center of the edge (see fig. 1b).

14. With respect to claim 9, Liu discloses the method for analyzing an electromagnetic field of a circuit board according to Claim 1, wherein, when a position of one port located on the edge of a conductor pattern residing in one layer (fig. 2 and 3b,

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[RP1]) coincides with a position of another port located on the edge of another conductor pattern residing in another layer (fig. 2 and 3b, [RP1]), one of the ports is displaced to be represented on a display screen (see fig. 2 and fig. 3a-3b and also see fig. 8).

15. With respect to claim 10, Liu discloses the method for analyzing an electromagnetic field of a circuit board according to Claim 1, including steps of: changing the shape (arbitrary shapes) of the conductor pattern residing in a particular divided area, to perform again the electromagnetic analysis over the particular divided area (a plane printed/microwave circuit of arbitrary shape is printed on a system of stratified substrate) (see fig. 1a); and integrating a result of the electromagnetic analysis over the divided area with the result of the electromagnetic analysis over the another divided area, thereby obtaining results of the electromagnetic analysis over the whole circuit board (combination of these GSM's yield an overall network characterization of composite circuit) (the abstract, section I, introduction, and section II, Model and GSM Space-Domain Integral equation method).

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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17. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al., (Full-Wave Segmentation Analysis of Arbitrarily Shape Planar Circuit, 1997, IEEE, page 1-9).

18. As per claim 3, Lui teaches method for analyzing an electromagnetic field of a circuit board as dividing two dimensionally the multilayer circuit board into a plurality of areas using dividing lines including a plurality of straight lines (see fig. 1a)

Lui does not implicitly teach the dividing straight lines are perpendicular to each other.

It would have been obvious to one of ordinary skill in the art that the dividing straight lines perpendicular to each other, which is created a 90 degree angle as a special case of an arbitrary angle that reduces a complexity for performing EM analysis in dividing two dimensional (planar plane) and easier to set up an electric and magnetic field tangential to the reference planes.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NGHIA M. DOAN whose telephone number is (571)272-5973. The examiner can normally be reached on 8:30-5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Chiang can be reached on 571-272-7483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nghia M. Doan
/N. M. D./
Examiner, Art Unit 2825

/Thuan Do/
Primary Examiner, Art Unit-2825
08/16/2008